



colours your world

MATERIAL
DESIGN
IMAGINATION
DECORATION
creativity
SIGNAGE

ELVAL COLOUR
Power to imagine



Contents

The Company	03	Rout-in system	10
Product description	04	Transportation	11
Material properties	04	Storage and protection	11
Applications	05	Sign/Canopy/Fascia	12
Surface	05	Sign box/Shop front	12
Machining fabrication techniques	06	Sign box/Monument sign	13
Jointing and fixing techniques	08	Signs totem	13
Bending	09	Technical data sheet	14
Cassettes fabrication	10	Colour samples	15



The company

ELVAL COLOUR is a leading European coated aluminium manufacturer. It produces and sells a range of building envelope products like roofing, façade, rain gutters, corrugated and perforated sheets. More than 90% of sales are exported to a total of 60 countries. The company's vision is to be a reliable partner that offers valuable additional services to customers by assisting in product specification and selection to best suit the needs of the project /application. Customer orientation and dedication accompanies production and product delivery. ELVAL COLOUR is proud to have employees who care about their work and are able to pursue their corporate goals and objectives with great energy and enthusiasm.

A leader in product quality and service, ELVAL COLOUR never ceases to detect customers' needs, responding effectively and efficiently to them. Continuous R&D in various fields allows steady improvement of technology, quality and environmental standards.

ELVAL COLOUR is a member of the European Coil Coating Association (ECCA), the European Aluminium Association, and is ISO 9001-2008 and ISO 14001-2004 accredited.



Product Description

etalbond® composite panels operate as well in architecture as in corporate display markets. "etalbond® for signage & display" is a category of products, that consist of lightweight panels. These incorporate a number of excellent properties for processing and installation, while they are easy to handle and transport at the same time. Excellent results can be achieved using conventional plastic and wood working tools. These products are mostly designed to fulfil the needs for various applications of the digital and screen printing market. Consisting of thinner aluminium skin, they have a lower static ability but are also characterized by major flatness and extra light weight.

For etalbond® display products, the most common applications are plane sheets. Routing and bending are seldom used, but the material offers this ability as well. etalbond® panels for displays, due to their favourable ratio of material properties versus price, substitute materials like foam PVC, solid polyester panels and are a worldwide success.

ELVAL COLOUR products of this group are etalbond® light and etalbond® slim, with the main distinction being the thickness of aluminium skin.



The etalbond® composite panel consists of a non-toxic polyethylene core, contained between two aluminium skins. It is built up of the following layers:

Protective plastic film

Aluminium (Alloy EN 3105, Temper H44)

Adhesive layer

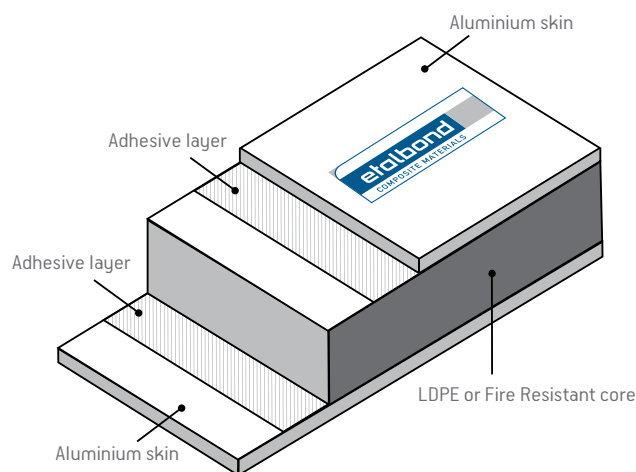
Polyethylene/fire retardant*

Adhesive layer

Aluminium (Alloy EN 3105, Temper H44)

High quality Coating System or Primer coating

*according to SBI-EN 13823 CLASS.EN 13501 b1,s1, d0)



Material properties

- The extremely smooth surface allows the highest quality images
- Lightweight with high stiffness and great dimensional stability
- Ideal for large format installations, using well known processing techniques
- Highly resistant to outdoor usage (UV Resistance)
- Operational working temperature ranging from -50 °C to + 80 °C
- Up to 10-year guarantee

Applications

The lightness of aluminium together with its proven durability and alloy strengthening makes it the ideal choice for a large variety of building and construction applications. It provides architects and designers with endless options for achieving high aesthetic value and energy savings, as demonstrated by the success of several Architectural Imagination Award competitions across Europe.

- Signage for outdoor and indoor (roads, shops etc)
- Corporate identity for gas and toll stations, shops, airports
- Printing, digital and silk-screen
- Exhibition stands
- Points of purchase
- Shop-fitting
- Light boxes
- Wall partitions
- Suspended ceilings
- Elevator/stair wall facings
- Machine cladding
- Decorative walls



Surface

The painted surface of coil coated metal, offers the highest performance from all other coating due to:

- The uniformity of cleaning, pre-treatment and coating made by a highly controlled coil coating process
- The well-defined nature of the liquid paint layers designed for the specific application and the basis for printing.
- ELVAL COLOUR is working together with the leading liquid paint suppliers and designs the respective surfaces according to their specific application achieving optimal results for the customer. The enclosed metal samples show the original surfaces in the various colours, gloss levels and quality. Those samples are able to vary from paint batch to paint batch within the tolerances set by the European Coil Coating Association and European Norms.

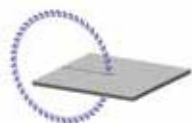
Surface treatment such as lamination/photo mounting, over lacquering, digital printing and screen printing require that you:

- Make sure to store your sheets to room temperature before using them, with special care to avoid low temperatures.
- Remove the protection film since the surface should be free of any contaminants (i.e. dust particles, oil, etc.)
- Pre-clean the surface with Ethyl or Isopropyl alcohol using a non-colored, soft fabric cloth. Don't use soaps or thinners as they may leave a residue on the surface, which may affect the surface treatment.
- Some paints require for the surface to be grinded with a wet abrasive paper. Afterwards remove the grinding dust with a lint free cloth, moisturized with spirit.

Since the white coated surface acts as a primer, the results of the mentioned surface treatments are exceptional. The superior flatness of etalbond® leads to applications in high-end sights images and digital printing.

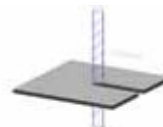
Machining Fabrication techniques

Saw Cutting



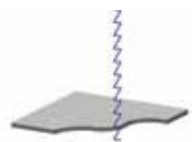
Existing machinery and tooling for woodworking and metal can be used to saw-cut etalbond®. The circular saw is applied for etalbond® in the same way as for aluminium sheets. The carbide tip blade made for aluminium and plastic is recommended. The cutting needs to be done on the reverse side of the panels. One should deploy good quality vertical panel saws or CNC cutters. Portable circular saws can be operational on small projects, provided they are equipped with a system of guides to ensure the cutting in straight lines.

Contour Milling



etalbond® can be cut to shape applying contour mills which are part of CNC machining. Milling cutters are cutting tools used in milling machines. They remove material by their movement within the machine or directly from the cutters shape. For etalbond® we recommend to adopt a milling bit with helix flutes (deep helical grooves) running up the cutter. A state-of-the-art way to cut etalbond® panels in size, is the use of an automated CNC machine. To achieve the cut, these machines are with rotating milling cutters equipped. CNC machines can produce all kinds of linear and curvilinear cuttings in one pass following a given CAD drawing exactly.

Contour Cutting



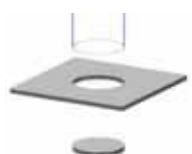
etalbond® can be cut to shape using jig saws and more rarely with scroll saws. The most important part of the saw is the blade. When cutting with jig saws, we recommend to apply saw blades for wood and plastic material. The higher the number of teeth, the smoother the finished cut. It is necessary to cut at the reverse side of the panel.

Shear Cutting



etalbond® can be easily sheared deploying rotary shears or guillotine shears with advanced cutting technology. Square shear is the most efficient method to size a large quantity of panels. The tolerance between the shearing blades must be regulated to prevent excessive edge rounding of the upper side of the panel.

Punching



etalbond® panels can be punched using standard metal punching machines. The punching of flat etalbond® is performed exactly the same way as in the aluminium sheets. Punching will cause a slight deflection of the cut edge on the impact side. To reduce aluminium edge roundness set the clearance of punch and die to be minimal (panel thickness x 0.05). The minimum diameter for a punched hole is 4 mm. The minimum width of web between the hole edges is also 4 mm.

Drilling



etalbond® can be drilled with standard twist drills used for aluminium and plastics on machinery common for metals. Holes can be made on etalbond® with a hand drill or a drill press with a drill bit or circle cutter. Chips removal during drilling process can be obtained by using a high rpm low feed and by occasionally lifting up the drill.

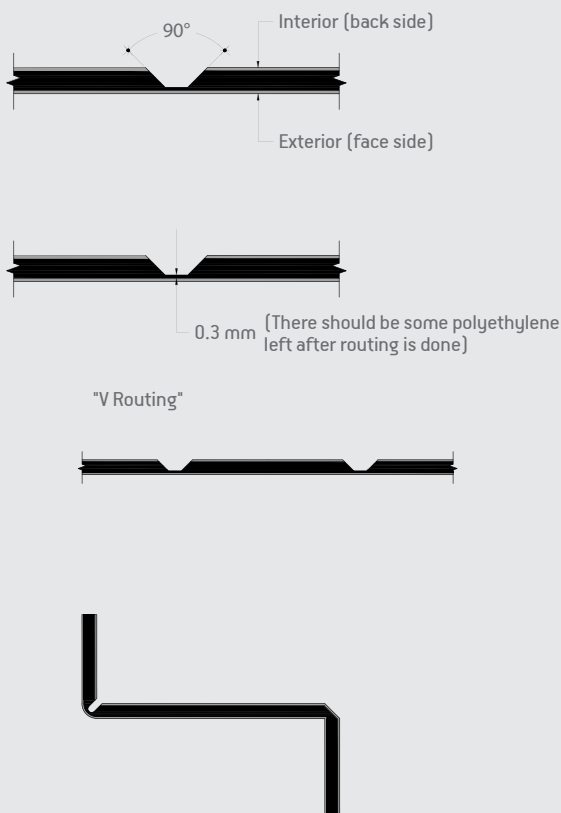
Cleaning of the Edges

In case burr occurs on the cut edges, or the edges need to be rounded, a common hand-held scraper can be used after cutting for smoothing out. We also recommend an abrasive pad for cleaning or deburring the edges of etalbond.

Routing

etalbond® can be routed implementing conventional equipment like horizontal and vertical routing machine. For accurate and precise manual folding of the etalbond® composite panels, resulting in a good finish, we route the rear side of the panels and extract the aluminium sheet and a part of the core. Standard praxis is to groove the panel 35mm from the edge. For routing the following mechanical equipment can be used.

- Vertical panel saw
- Circular saw
- Hand operated or portable plunge router
- CNC routing machines



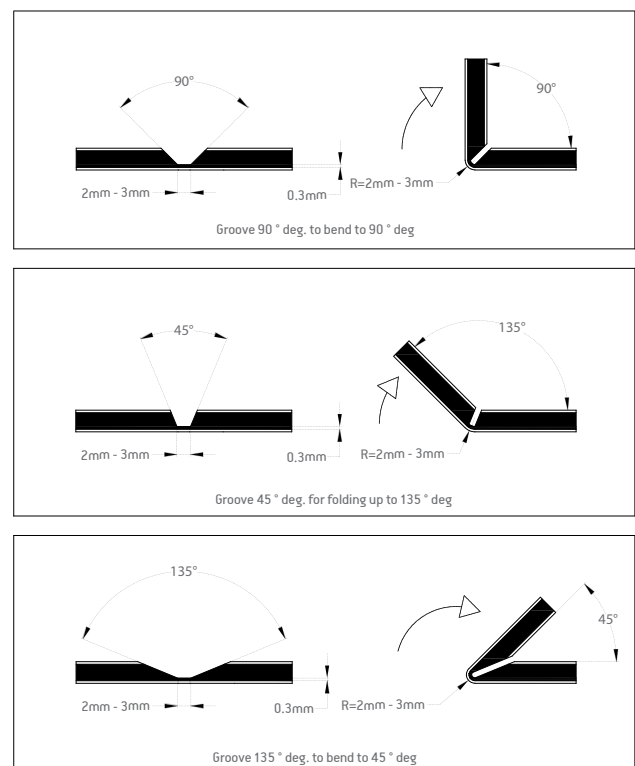
Folding

U-grooved panels can be folded with folding jig, press-brake or a plate punch. To ensure a straight line of folded corner, fold the grooved panel on a flat workbench. It is recommended that the folding operation is being executed at 10°C or a higher temperature. Work directions: For shaped elements with a radius between 2 to 3mm proceed as follows: First a V-shaped or rectangular groove is routed by a milling cutter on the inside of the fold, ensuring 0.3 to 0.5 mm of core material is left on the lower cladding sheet. The shape of the groove and its respective depth determines the folding radius. Note that smooth bending (shape forming of elements) cannot be obtained without a uniform thickness of polyethylene or fire resistant core remaining.

When a V-groove is bent at a 90° angle the bending radius of the final product will be 2-3.5 mm R and the element will be elongated by 0.5 to 1mm.

As such the original panel should be cut shorter by that proportion. For even sharper edges (down to 45°) a V-groove of 135° should be made. The base of the groove should always be flat and about 2 to 3mm wide.

In general the folding radius is determined by the shape and depth of the groove. It is advisable that several trials are made before the start, to insure the required folding radii in etalbond® cassettes.

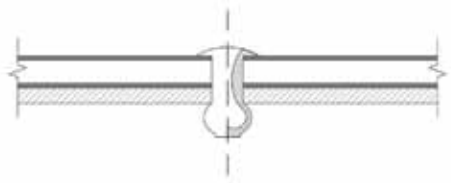


Jointing and fixing techniques

The following details are indicative. These are not the only methods that can be used to fix etalbond material. Good design for thermal expansion should influence the choice of details used. Allow a minimal spacing of 15 mm to position the rivet from the etalbond® panel edges. To compensate for thermal expansion the drilled hole should be at least 2mm larger than the rivet diameter.

Riveting

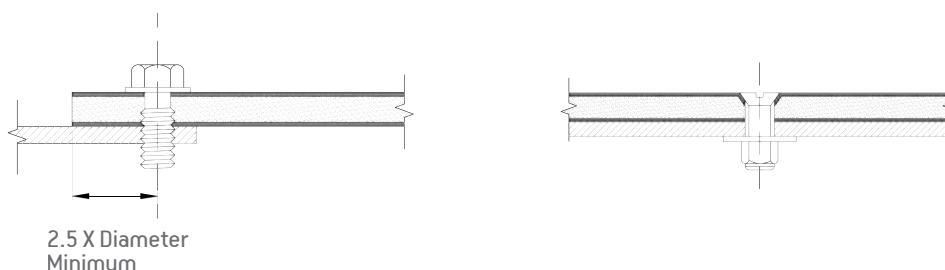
etalbond® panels can also be fastened together or joined to aluminium extruded elements with inox or aluminium blind rivets or bolts. In fastening with rivets there should be one fixed point at the middle of the etalbond work piece. The other fastening points should be made flexible with sufficient hole play. Rivets head should always must be large enough to cover the bore hole over 1 mm in the panel. If blind rivets are to be used make use of special wide closing heads or tightly fitting washers for the protection of etalbond® surface. The suggested rivet shaft diameter should be 5mm while the rivet head diameter should be from 11 to 14 mm. The thermal expansion of the aluminium panel should be taken into consideration for this and to avoid problems the hole on the panel should always be larger than the rivet shaft to allow for expansion.



Screwing

Where connections with screws are concerned the same technical requirements apply as with rivet connections. In selecting screw material, care should be exercised to ensure that the connectors do not corrode. For this reason, use of Aluminium or Stainless steel screws is recommended. Aluminium or Stainless steel screws are installed through pre drilled holes. When joining etalbond® for outdoor use, the thermal expansion of etalbond® should be taken into account. To avoid the development of thermal stresses, the hole diameter in the panel must allow for the expansion. Fastening without thermal obstructions is possible by using stainless steel screws with sealing washer that are been approved for construction. These screws should be suited for the certain substructure. Only aluminium, stainless steel and plastic can be directly connected to etalbond® without additional precautions.

Please note: It is important to remove the protective film in the screwing area prior to screwing or riveting.



Gluing

Adhesives can be used along with double face tape (3M-VHB) for fastening etalbond® temporary on flat surfaces such as walls, ceilings, furniture, coverings etc.

Adhesive sealing compounds

For high strength and elastic connections for inside uses we recommend the usage of either SIKAFLEX 252, SIKAFLEX 11FC, SIKA Bond –T2 or Prosyflex 3000 by Tremco.

Please note:

Prior to any adhesion work clean carefully the area to be adhered. Select most appropriate adhesive that ensures adhesion integrity in the atmospheric conditions where it is applied. Always pretest adhesives before fabrication and installation and subject the samples to possible working temperatures to observe possible distortions due to shrinkage of adhesive or deflections due to different thermal expansion rates of the joined components.

Bending

etalbond® can be formed and bent with the following methods:

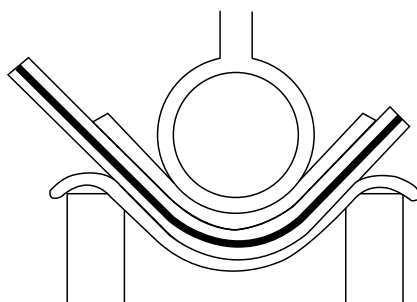
• Bending with Press Brake

When bending etalbond® with press brake, use a top die having the desired radius. etalbond® can be brake-formed from flat up to 90° to form a right angle. etalbond® (4mm) panels can be bent 90° at a min inside radius of 19 mm by using a hydraulic brake press with an open air bend bottom die with an inside opening of 50 mm and an edge minimum distance of $l_{min} = 5 \times t$ (panel thickness) = 20mm (for etalbond® /FR 4 mm).

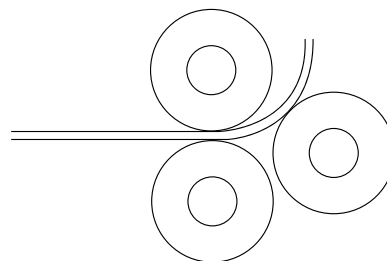
• Bending with 3-Roll Bender

Three-roll bender enables a larger bending radius than press-brake bending.

Groove and slit the curved edge before bending. A roll bending machine –mainly three or four roll machines- allows a larger ending radius than in press brake. It should be ensured though that the feeder rolls do not press too tightly and distort the composite material. The minimum bendable limit depends on the machine type used and the length of the bender.

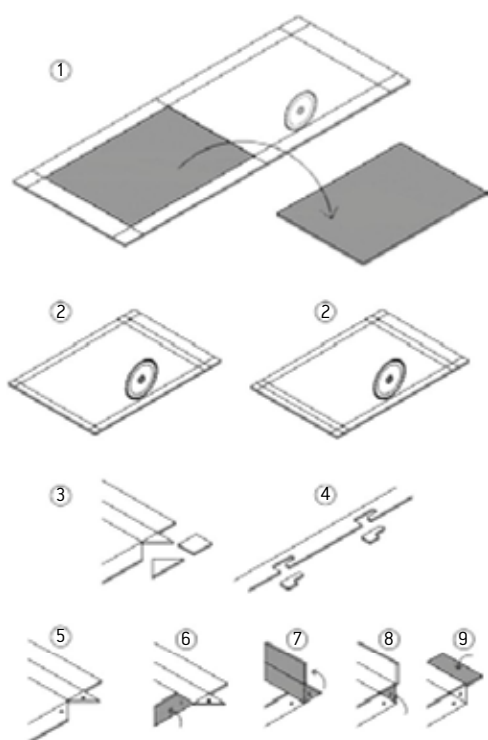


$$R_{min} = 15 \times t$$



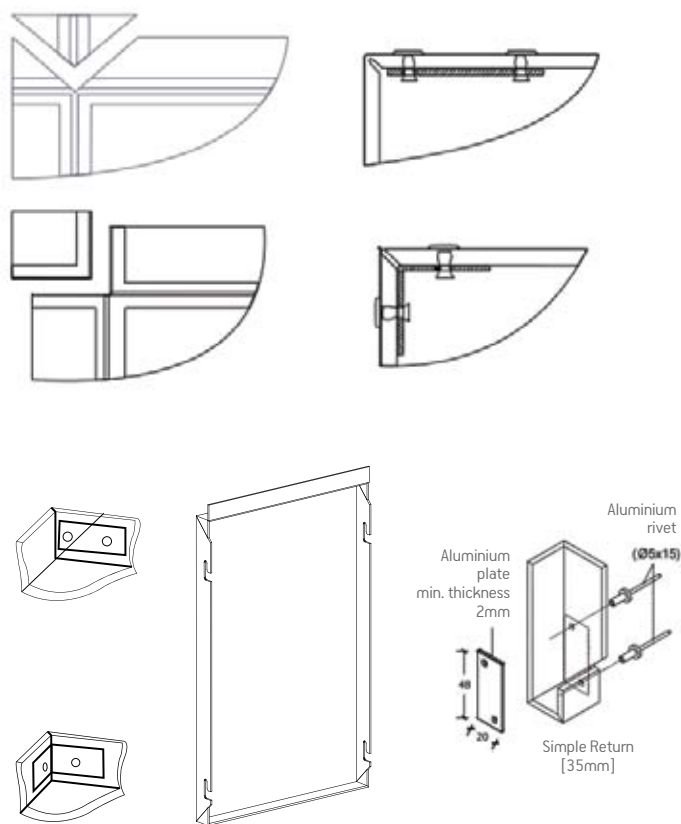
Cassettes fabrication

1. Leave a minimum space from the edge of the panel to ensure the squareness and geometry of the cut out shape
2. Routing
3. Cut off corner edge
4. Cut off slots
5. Drill holes
6. Side turn
7. 90° turn on second routing line
8. Close corner element
9. 90° turn on outside routing line



Rout-in Return System

Standard processes used in metal and plastics industry can also be utilized for joining etalbond®. If etalbond® is to be joined to extrusion profiles or structural framing then tapping screws, rivets, bolts and nuts can be used. Structural adhesives and double faced high strength tapes can also be used in conjunction with mechanical fastenings. Normally, 35 or 50 mm from edge is grooved and folded.



After assembly, the corner is sealed with sealant to prevent the corner slit from water leakage. The corner is fixed with aluminium blade or aluminium corner blade.



Transportation

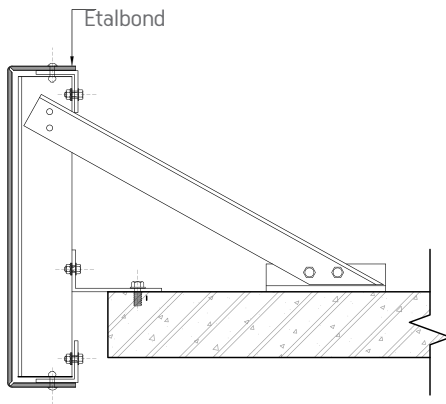
During transfer etalbond sheets should be secured against slipping. To avoid any chance of scratching the final coated surface, the frames should be lifted holding them from both ends. The protective film must not be exposed to direct sunlight or heat for a period that exceeds 30 days.

Storage & protection

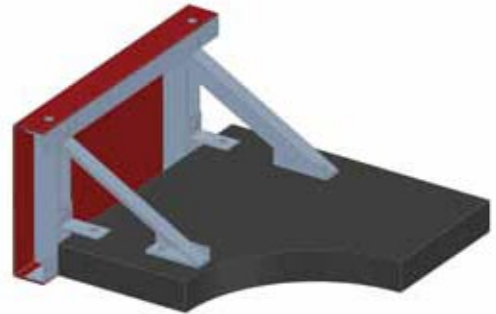
etalbond® sheets must be stored in dry and well ventilated places, at normal temperature conditions. Pallets must be protected against rain, moisture penetration and humidity condensation.

Placing the pallets one on top of the other is only allowed for pallets of the same size and for a number of maximum 3 (with no more than 40 sheets each). The protective film ensures the protection of the coating during packing, handling, transportation and installing. To avoid colour inconsistencies it is recommended to install the panels using the same arrow direction that are printed on the protective film surface.

Sign Band/Canopy/Fascia

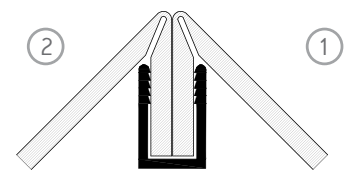
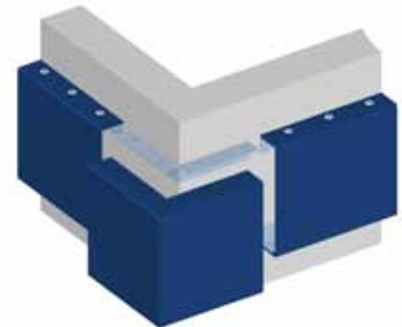
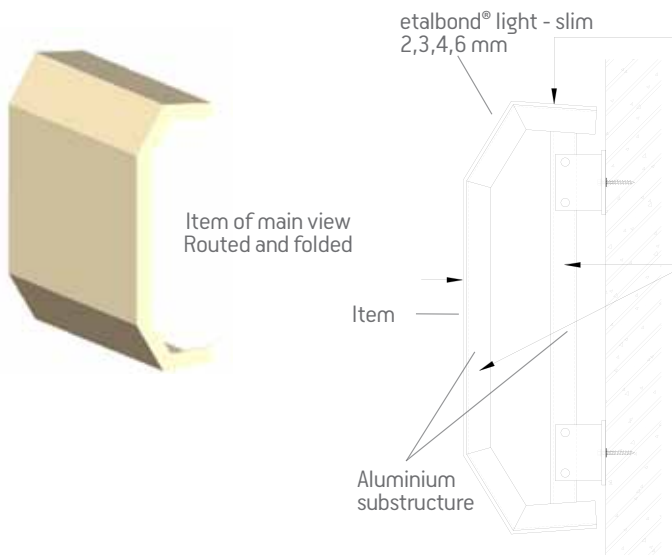


Section



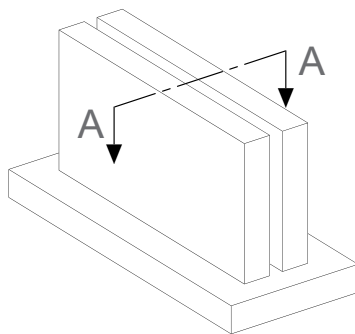
Axonometric depiction

Sign Box/Shop front

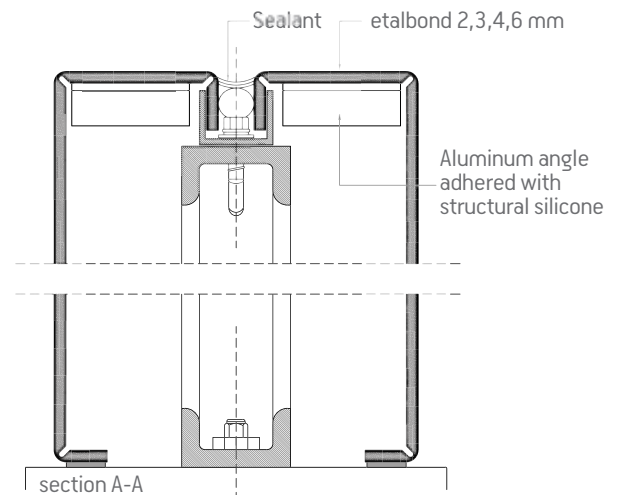


Detail of connection

Sign box/Monument sign

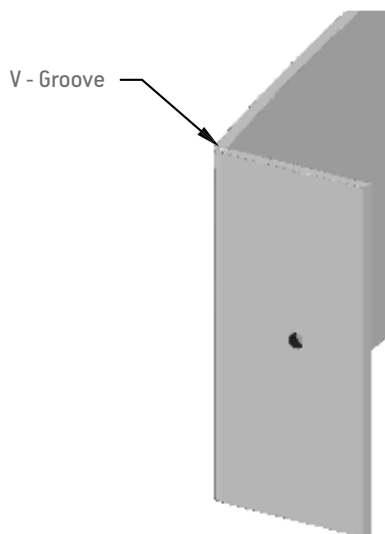


Base



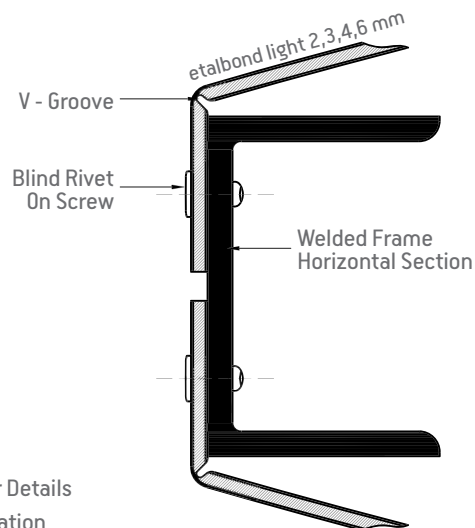
Sign Box/ Monument Sign

Signs totem



V - Groove

Corner Details
Fabrication
1. Routing
2. Bending
(Rolling Machine)



Technical Properties

	Unit	2mm	3mm	4mm	6mm	
etalbond® slim, weight	kg/m ²	2,6	3,5	4,4	6,2	
aluminium layer, etalbond® slim	mm	0,2				
etalbond® light, weight	kg/m ²	2,9	3,8	4,8	6,6	
aluminium layer, etalbond® light	mm	0,3				

Dimensional Tolerances

panel thickness	mm	±0,2
panel width	mm	-0/+4
panel length	mm	≤4000mm: -0/+4 >4001mm: -0/+6
rectangularity/diagonal difference	mm	≤3
linear thermal expansion coefficient	mm/m/ 100°C	2,4

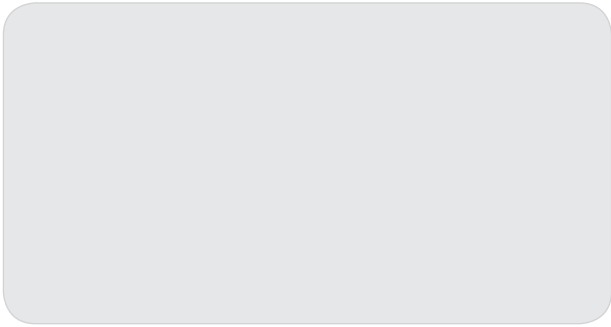
Surface Properties

coating thickness, ECCA T1	µm	22±3
pencil hardness, ECCA T4		min F
resistance to cracking on bending, ECCAT7		No cracks at 1,5 T (90°) or 3T (180°)
reverse Impact Resistance ECCAT17	Nm/mm	No cracks at 7,5 Nm/mm
surface Quality		Dents, marks, hits, grooves, stains etc. not visible from a distance of 500mm at an angle of 90 degrees are considered acceptable
protective film		an area of 3-5mm from each edge might be without protective film

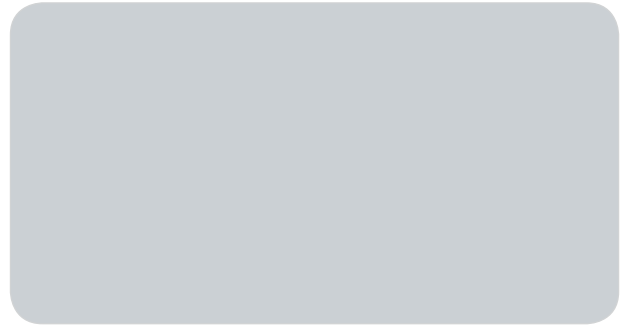
Other Properties

alloy/temper of the aluminium cover sheet		EN AW 3105/H44 or 4116/H44
core LDPE (low density Polyethylene) density range	kg/cm ²	0,92
operational temperature range	°C	-50°C to +80°C

Colour Samples



White Mat



Silver Mat



Buttler Finish Mat



Mirror



Black High Gloss



Red High Gloss



Blue High Gloss



Yellow High Gloss



100% Recycling

In etalbond light both the aluminium & low density polyethylene core materials are fully recyclable

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